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AND

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ON THE HABITS OF SOME OCEANIC HEMIPTERA.

By H. F. WICKHAM, Iowa City, Iowa.

The pelagic oceanic Hemiptera have possessed great interest for naturalists since their first description by Eschscholtz in 1822. The fact of their being found usually far from land and appearing only in pleasant weather has tended to cause a scarcity in collections and comparatively few entomologists have had an opportunity to study them in life. The report of Dr. Buchanan White, one of the "Challenger" series, formed a part of the library taken to the Bahamas by the recent University Expedition (of which the writer was a member) and awakened a desire to add something to the knowledge of these curious creatures.

Though a careful watch was kept for them, not one was seen until June 22d, forty-seven days out of port; on that date, soon after noon, three or four specimens were seen skimming over the surface of the water after the fashion of our common *Hygrotrechus*, but with extremely rapid movement, so that the note-book entry was made—"any attempt to catch these insects with hand-nets from the deck of the schooner would be vain." On the 24th they were seen again (in both cases off Key West), but no captures could be made. The sea was almost perfectly calm, not enough breeze stirring to fill the sails.

On the second of July, while at anchor near the Sand Key Light, a few were seen near the vessel between three and four o'clock in the afternoon. By getting into a boat which was lying alongside, no difficulty was experienced in capturing two or three that came within reach of the net. The next day, while the vessel was under way with quite a pleasant breeze, they were seen again, before seven o'clock in the morning, skimming about the bows. Two or three were again taken by sitting in the chains under the bow-sprit and "jabbing" at them with a crab-net lined with bolting cloth, as often as one crossed our course. By eight o'clock they were less numerous. With the aid of the Report, previously mentioned, they were determined as *Halobates wullerstorffi* Frauenf., a name afterwards verified by Mr. O. Heidemann, of Washington.

The following day more of them were seen in Lat. 24° 24′ N., Long. 79° 49′ W. Immediately after dinner, when the water was still, except for a smooth swell, a specimen was caught in a crab-net and turned loose, without being touched by the fingers, into a tub of salt water on the deck. The insect at once commenced to scud around on the surface with movements so rapid that the eye could not follow them, and any observations on the *mode* of locomotion were out of the question. In a few minutes partial exhaustion succeeded these violent exertions, and it was then seen that the long middle pair of feet did nearly all the work of progression, the anterior pair being carried folded up (nearly) and projecting forwards, a little to each side of the head. The antennæ point forwards and outwards, forming a **V**. When the bug tires, the muscles at the insertion of the legs appear to weaken first, and the body is let down on to the water. It there rests in very much the position shown in Mr. Walker's figure in the "Entom. Monthly Magazine" for October, 1893, though my sketches, made on the spot, show sharper angles at all the knee joints. The same position is not always maintained, however, by different specimens.

The movements of a tired specimen were as follows: in making a stroke the middle legs were brought forward until the tips were about on a line with the head. They were then rapidly brought back so as to nearly touch the tips of the hind pair, which were moved comparatively but little. The posterior feet seem to be used to steer with rather than as an aid in progression. The four

legs work in unison, not alternately, *i. e.* the middle legs keep time with each other and with the hinder pair. The tips of the legs rest on the water, and are not immersed in it so that the little hollows near each, caused by the weight of the insect, can plainly be seen. With captive specimens sunlight acted as a stimulant, and evoked activity, which was lessened by shade.

One *Halobates* was then placed in a tightly corked bottle, filled, when immersed, so as to make certain that no air was enclosed, except the thin film which invested the insect. This was done at 1.22 p. m., and at 1.30 was witnessed what was then supposed to be the final struggle with death; after the expiration of four minutes this recommenced, and was continued at irregular intervals until 1.43, after which no more were seen until 1.48, at which time a tiny bubble of air made its way from the cork, and at 1.58 another of these bubbles evoked a feeble struggle, the last. When finally removed to the alcohol bottle, not a movement could be detected, and the insect was undoubtedly drowned. This would appear to antagonize the theory that they stay beneath the surface in stormy weather. I also noticed, with several specimens, that they could (or would?) only dive after being wet so that "skimming" was impossible, but this does not agree with the observations of other naturalists, and I recognize its practical worthlessness as purely negative evidence.

No more *Halobates* were seen during the trip, though on the 15th of July some little water bugs, at first taken for the larvæ of *Halobates*, were noticed at the extrance of the Spanish Wells harbor, skimming about on the surface of the water. Several pairs were observed in coitu and directed suspicion to the correctness of the reference—so Mr. Heidemann looked up the matter and found them to be *Rhagovelia collaris* Burm., hitherto supposed to be a fresh water species exclusively. Fortunately, one couple was taken in the net, and did not separate on being placed in a tub for examination, so the following details were observed: The male rests rather far back on the female, his head reaching to a point immediately above the insertion of her middle legs. His anterior legs are then extended forward and bent at the "knee" nearly at right angles, so as to clasp the female thorax a little in front of the widest portion in such a way as to prevent his sliding off. All progression is then performed by the female, the male resting quietly on her back. His hold was very

firm, as the female soon made frantic efforts to kick him off with her feet, and finally began to turn somersaults *in* (not on) the water in the attempt, presumably, to get rid of her mate, who, however, held on even after the pair was placed in alcohol.

It was noticed, with the exception given above, that only those specimens wetted by handling would dive at all. Those that were unable to keep afloat by being thus thoroughly wet, soon die and sink quite to the bottom of the vessel in which they may be confined. Some only partially wetted were able to keep very close to the surface, but floated on their backs and were apparently unable to right themselves.

The question of the disposition that these insects make of themselves during storms may be regarded as still unsettled, since it seems that wetting in many cases means death. Mr. Walker* thinks that they dive in rough weather, and only come up when it is absolutely calm, but the observations recorded above make this conclusion seem unlikely for some of the species at least—though his theory is by no means disproven, especially when attention is given to the apparent impossibility of the insect riding out a severe storm on the surface of the water without being wetted.

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BUTTERFLIES AT MILES CITY, MONTANA.

By C. A. Wiley.

A barren country surrounds Miles City, the centre of the great grazing territory of eastern Montana, a country of prairie and badlands with little verdure other than that on the immediate border of the rivers and in the creek bottoms.

Here a lover of groves and forests must be content with a variety of trees that might easily be enumerated on his ten fingers, and but few of even these.

Cottonwoods, broken and scrawny, are the only trees of large size near the city, but as one penetrates the country to the heads of the Yellowstone's many tributaries, he meets with ash, elm, box-elder and willows, all native varieties, and differing somewhat from the same trees of the eastern States.

In the badlands and in the hilly sections are pines and cedars also, but the majority of our country is a vast prairie, grass

* Entom. Mo. Mag., second series, vol. iv, p. 231.

clothed, but bare of tree or shrub (the ever-present sage-brush excepted) and parched by the sun from July until Winter.

What limited amount of shrubbery does occur is also confined to the water-courses. We have our native choke-cherry, wild-rose, plum, willow, snowberry, buffaloberry, greasewood and sagebrush, a meagre list indeed, when compared to the hundreds of shrubs and bushes abounding in most eastern localities. All vegetation without it may be grasses and wild flowers occurs with us in but the most limited variety. We have no woods, no swamps, no hedges. What wonder then that the entomologist's hopes are saddened as he realizes that a corresponding dearth exists among his favored and busy tribes!

I wonder who can recount the exact number of *Papilios* he has seen during three years past? It is my good (?) fortune to have seen just fourteen during that period. In the season of 1891 I saw but one, it was one of the *Turnus* group, probably *rutulus* or *daunus*, its rapid flight, however, baffled detection. In May of this year while returning from our ranch, on horseback, a distance of about one hundred miles, I saw another of this same group, but was unable to capture it. During this trip, also, I counted nine *zolicaon*, only one of which was not in rapid flight across country; this one, a female, was depositing her eggs on our native wild parsnips, and I caught her easily, and obtained some twenty eggs, which I reared on cultivated parsnips in my garden. The only other *Papilio* seen this year was one related to *zolicaon*, but had none of the prominent show of yellow so characteristic of that species when on the wing. What it may have been I cannot say.

Finally, two specimens of *zolicaon* taken on the summit of Signal Butte, near this city, on May 30, 1892, complete the number. I cite my experience with the *Papilios* to give a general idea of the scarcity of species occurring here.

A few species of *Colias*, *Pieris*, *Euptoieta*, *Phyciodes* and *Lycæna* occur here, however, in sufficient abundance not to be called rare. There exists an unusually localized distribution among most species here, which doubtless results from a similar localization of the food-plants, many of which are to be found only near flowing springs or other sources of moisture. The *Satyrids*, *Pamphila*, and other prairie varieties, however, may be met with in country of almost any character, as also may such ranging

species as the *Argynnids*, *Pyrameis cardui* or *Danais archippus*.

This season has proven an unusually productive one, and fully twice the number of butterflies were on the wing this year than appeared in either 1891 or 1892.

Our climate and soil are so dry that no agriculture is successful without irrigation, and I attribute this season's productiveness in the Lepidoptera of this immediate vicinity to systems of artificial irrigation which have been in successful operation here only the last two seasons, and no doubt all insect life so dependent upon vegetation, will steadily increase as the amount and variety of plant-life is multiplied year by year by the introduction of agriculture under our irrigation systems along the Tongue and Yellowstone River bottoms.

In the interest of the readers of the ENT. NEWS I append a list of the species of diurnals that I have taken about Miles City during a three years' residence here:

Papilio zolicaon, rare.
Pieris rapæ, common.
" *protodice*.
Anthrocharis olympia, not rare.
Colias eurytheme, common.
" *eriphyle*, common.
Danais archippus, rare.
Argynnis idalia, one ♀, differing a little from eastern spec.
Argynnis edwardsii, not com.
" *nevadensis* "
" *cypris*, rare.
" sp., one.
Euptoieta claudia, one of the most common (averaging *small* in size).
Melitæa, three species; not common and local.
Phyciodes tharos, rather com.
" *carlota*, quite com.
Grapta zephyrus, one.
Vanessa antiopa, not common.
" *californica*, one.
" *milberti*, rare.
Pyrameis cardui, not rare.
" ? sp. nov. sp., possibly Hy. Edw. hybrid *caryæ* et *atlanta*.
Limenitis weidmeyerii, rare and local.
Limenitis disippus, rare and local.
Cœnonympha ochracea, rather common.
Satyrus alope-olympus, rare.
" *ætus*, rare.
" *charon*, rather com.
Chionobas varuna, several specimens taken at ranch in July 100 miles east of Miles City.
Thecla niphon, rare and local.
Chrysophanus hypophlæas, not rare.
Chrysophanus rubidus, rare.
Lycæna melissa, common.
Pamphila, two or three species, all rare.
Pyrgus tessellata, common.
" sp., not common.
Pholisora catullus, common.
Eudamus tityrus, one.
" sp. one.

Notes upon a Small Collection of Butterflies from Serra (Sjerra), Timor-Laut.

By W. J. HOLLAND, Ph.D., Pittsburg, Pa.

Through the kindness of my friend, Mr. Robert M. Grey, I have been able to add to my collection a number of specimens received by him from a friend who obtained them from Serra, the small rocky island, which lies at the northern entrance of the strait, which separates northern and southern Timor-Laut. The species received are the following: *Chanapa sacerdos* Butl., *Danais hamata* Macleay, *Hypolimnas forbesii* Butl., *Precis expansa* Butl., *Doleschallia pratipa* Cram., *Rhinopalpa sabina* Cram., *Delias timorensis* Boisd., *Terias maroensis* Butl., *Belenois pitys* Godt., *Catopsilia scylla* Linn., *Papilio aberrans* Butl., and *Euthalia amanda* Hew.

The most of these species have been already recorded from the Timor-Laut group, and the species credited to Mr. Butler were described by him from the collections made by the naturalist Forbes during his visit to the islands. To Mr. Butler I am under obligations for having aided me in the determination of some of them. The presence of *Euthalia amanda* Hew., in the collection is very remarkable. Mr. Doherty, who has seen the specimens, has expressed great surprise at the fact that the collection should contain a specimen of this genus, and is inclined to think that there is an error in the locality label. But all the specimens were received at one time, in one parcel, all labeled in the same handwriting, and all had explicitly written upon them "Sjerra, Feb. 1893," in a bold and distinct hand. If the collector was correct, as there is a strong presumption that he was, the discovery of the genus *Euthalia* in Timor marks the southernmost extension of the genus thus far recorded in the annals of research. As the genus is not represented, so far as is at present known, in any of the islands nearer Timor-Laut than Celebes, the presence in Serra of *E. amanda*, originally described by Hewitson from Borneo, is a remarkable fact in distribution.

VOL. VI, No. 2, of "Insect Life" should be of great interest to the economic entomologist, as it is almost entirely made up of the papers read at the meeting of Economic Entomologists held at Madison, Wis., Aug. 14–16, 1893; the number contains 147 pages.

LIST OF THE HISPINI FOUND IN NEW JERSEY.

By H. W. WENZEL, Phila., Pa.

The following species of Hispini were taken at Da Costa, Atlantic County, N. J., in a radius of not more than one mile:

Microrhopala excavata (Oliv.)
Odontota notata (Oliv.)
" *scapularis* (Oliv.)
" *bicolor* (Oliv.)
" *horni* (Smith)
" *dorsalis* (Thumb.)
Odontota rubra (Web.)
" *nervosa* (Panz.)
Charistena nigrita (Oliv.)
" *ariadne* (Newm.)
Stenispa metallica (Fab.)

Since the publication of Prof. J. B. Smith's catalogue of the insects of New Jersey, through careful collecting many unrecorded species of Coleoptera have been added, especially from collections made in south Jersey, in the sandy pine-barren region, where large districts are entirely unexplored, and where probably much more valuable material will be obtained.

The flora of this small district, in which all the species in the above list were taken, is very extensive, hence a large collection is always looked for by the collector.

This list of Hispini from Da Costa adds four species to the list, besides including all the species mentioned in Prof. Smith's catalogue, except *Microrhopala vittata*, which is found very common along the coast during July. *M. xerene*, which is also very common in some localities along the Delaware River during June, where large numbers of the species can be taken. Both species feed on similar plants found in wet places.

M. porcata is the only species I never captured, and is recorded from Hudson County by Mr. M. L. Linell.

This list is remarkable not only for the number of species found, but is also interesting in regard to the geographical distribution that some of the species possess.

In a communication from Mr. Ulke, who writes me of *Odontota horni*, "I have a single specimen which I took in Virginia. *O. notata* I have only from Florida, and did not think it would be found in New Jersey."

Odontota horni also occurs in Texas (Mr. Charles Liebeck's collection). Of *Odontota bicolor* I received specimens from Mr.

Morrison, collected in Arizona; also have specimens from Delaware County, Pa., collected by Mr. Charles Johnson, also from Newark, N. J.

Odontota horni and *O. notata* are found on the same plant, *Tephrosia virginiana*, commonly known as Goats Rue.

Of all the species mentioned, none were found unique.

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SYNONYMICAL NOTES.

By GEORGE H. HORN, M. D.

In a recent study of the Coleoptera of the Peninsula of California my attention was called particularly to an arrangement of the species of *Conibius* and *Notibius* published by Capt. Casey (Ann. N. Y. Acad. Sc. v). With the exception of two species, all those heretofore placed in the latter genus have been transferred to *Conibius*, making the latter heterogeneous, and requiring the formation of a genus *Conibiosoma*, which cannot in any way be maintained. There have been at the same time two species of *Notibius* named which are not separable from *puberulus* (*substriatus* and *laticeps*), both being simply feeble variations from our assumed type.

Aphanotus has also had a new name added to it, the species being separated by the apparently very good character of having the eyes divided by the sides of the head in *brevicornis* and not divided in *parallelus*. Usually such a character is believed to have generic value, but in the present instance has no value whatever, as there are in my series three specimens in which one eye is completely divided, and in the other not. The remarkable coincidence is, that in the three specimens the right eye is the divided one, the left not.

IN July, 1893, while collecting in a garden in Cambridge, Mass., a friend of mine caught a bright, fresh specimen of *Papilio philenor* (Linn). which had evidently come from larva grown in the immediate vicinity. The seeming scarcity of this butterfly in this part of New England has prompted the recording of the above instance of its occurrence here.—S. W. DENTON.

THE annual report of the Curator (Alexander Agassiz) of the Museum of Comparative Zoology at Harvard College for 1892–93 states that in 1876, Dr. Hagen refused an urgent invitation to assume charge of the entomological collection of the University of Berlin.

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PHILADELPHIA, PA., FEBRUARY, 1894.

IN the NEWS for October, 1893, p. 266, we published an editorial on the transmission of specimens of Natural History in the mails of the Universal Postal Union. It was there stated that the Academy of Natural Sciences of Philadelphia had resolved to address scientific bodies in certain countries therein named, and ask them to request their respective governments to favorably reconsider a proposition, made by the United States Post-office, to admit such specimens to the mails of the Union under the rates for "samples of merchandise." The Academy caused circulars to be printed, whose language in many respects was identical with that of our editorial, and sent them to various societies. Copies of the circular were also sent to scientific journals, in some of which it has already been printed.

The publication of this circular in "Science" and in "Nature" has called forth some adverse criticism. Specific replies thereto have been prepared, and will doubtless soon appear in those journals. Here we merely wish to state the faults found and the nature of the rejoinders.

The critic in "Science" is Mr. W. Hague Harrington, the well-known Canadian entomologist. He believes that the trouble lies not with the countries who have rejected the proposition of the United States Post-office, but with the latter by not arranging a "Parcels Post" with those countries, such as many of those countries already have between themselves. The reply to this is furnished by an official letter from Mr. N. M. Brooks, Superintendent of Foreign Mails, U. S. P. O., in which it is stated that the lowest charge in Great Britain on a parcels-post package "weighing 3 pounds *or less* addressed for delivery in Belgium is 1 shilling 3 pence (= 30 cents), and to France 1 shilling 4 pence (= 32 cents), while in Canada the charge for a pound *or less* would be to Belgium 46 cents, and

to France 48 cents." "Under present conditions a package weighing 4½ ounces may be sent from Canada to Belgium or France as a letter upon the payment of 45 cents; as a Parcels-Post package the charge would be 46 and 48 cents respectively; as a 'sample' the charge would be 3 cents," that is, at the rate of one cent for every two ounces.

Mr. Robert McLachlan, the noted British authority on the Neuroptera, is the critic in "Nature." While commending the movement, he also regrets that the United States has not a Parcels Post, as he says that the sample-post can only be used for small packets. As shown in the above quotation from Mr. Brook's letter, all parcels-post packages sent from Great Britain, weighing less than three pounds, must pay the three-pounds rate. By far the most of the packages sent by naturalists to each other weigh less than three pounds, and a large number weigh less than one pound, this estimate excluding alcoholic specimens which are unmailable. Whatever view may be held as to the desirability of the adoption of a Parcels Post by the United States, it must be evident that a Universal Sample Post for specimens of Natural History is of equal, if not, as is our opinion, of far greater importance.

DIASPIS LANATUS.—This injurious scale-insect has hitherto been recorded from Jamaica (where it is common) and Antigua. Two West Indian localities may now be added:—Trinidad (Port of Spain, on *Carica papaya*, found by Mr. Urich), and Grand Cayman (on oleander, coll. H. MacDermot, com. Prof. Townsend). It has also been discovered in more than one locality in the United States, as will be described in the annual report of the Dept. Agriculture for 1893. But the more particular purpose of this note is to state that the Antigua record must be canceled, being founded on an error. Long ago Mr. Barber sent me some scales from Antigua on *Heliotrope*, the ♀ scales crowded on the stems, white with brownish exuviæ, which were near the edge, but not on it. The shape of the scales was oval, about 4 mm. long and 3 wide. With these were small, white, tricarinate ♂ scales. This insect I regarded as a new *Chionaspis*, which I named in MS. *C. major*. Later, on comparing the ♀ insect with that of *Diaspis lanatus*, I found great similarity, although the produced segments on each side of the *C. major* were fringed with numerous spine-like plates—a feature not nearly so strongly developed in typical *D. lanatus*. On the whole, I concluded that the insect must be a variety of *D. lanatus*, and that the tricarinate ♂ scales found with it did not belong to it. Lately, having sent some of the *C. major* to Washington, Mr. Howard protests that it cannot be *D. lanatus;* and on reconsidering the matter I believe he is right, and that it is a new *Chionaspis* after all. *D. lanatus*, therefore, is at present unknown in the Lesser Antilles, and *C. major* is to be added to the West Indian list of Coccidæ. It is intended to publish fuller details concerning it at some future time.—T. D. A. COCKERELL.

DEPARTMENT OF ECONOMIC ENTOMOLOGY.

Edited by Prof. JOHN B. SMITH, Sc. D., New Brunswick, N. J.

Legislation Against Insects.—This subject is not a new one by any manner of means, and has attracted attention in several States of the Union, notably California and Massachusetts. In the latter State legislation extends only in the direction of an attempt to exterminate the Gypsy moth. In California the interest of the growers of the Citrus fruits have been the prime consideration. I am not aware that in any State there exist laws which can be made applicable to compel the destruction of insects of all kinds, and certainly nowhere is there any legislation that has proved absolutely successful. I have already touched upon this subject in this department, and have indicated that there has been a growing demand among the more intelligent farmers and especially fruit-growers, for some method of compelling a general attention to insect injury and the adoption of measures for the destruction of injurious species. It happens altogether too often that the careful farmer who does all that it is possible for him to do to prevent injury upon his own domain, finds that his efforts are to a large extent made useless by the fact that some of his neighbors do not adopt similar measures and annually raise on their land a sufficient number of insects to supply the entire vicinity. Therefore, instead of finding his task lightened year by year, through a gradual reduction of the injurious species, he finds that the supply is fairly well kept up through no fault of his own. A man finding himself in that position, naturally seeks for some method of compelling his neighbor so to use his property as not to damage him, and the question has been brought up in the agricultural societies in New Jersey for some time past, resulting finally in the appointment of a committee by the State Horticultural Society to inquire into the possibility of preparing a law which was enforcable, and which enforced would accomplish the result aimed at. Of this committee the writer was a member, and the investigations made resulted in the conviction that it would be an extremely difficult matter to procure the enforcement of any law on the subject; but as laws were demanded an act was drafted which it was believed would avoid some of the objection made to other similar legislation, and which would not be a dead-letter where there was sufficient public sentiment to secure its enforcement.

In the first place, it was believed that the sentiment against informers on the part of juries, and indeed justices as well, was so strong, as a character who sought to derive a profit from even the illegal acts of his neighbors, that it would be difficult to secure a conviction on any testimony given or secured by him.

In the second place, it was decided that the act should be called into effect only through the action—first of the County Boards of Agriculture, and afterward through the action of the State Board of Agriculture, or its

Executive Committee, in this way throwing the burden of enforcing the act upon the official organization of the farmers in the State, and making whatever penalties were collected subject to the general purposes of the organized agriculturists of the State. No compensation except such as the State Board may make, is provided for the commissioners to be appointed under the act, and those accepting the appointment under it will be men who are themselves personally interested in securing its enforcement. Under the general laws of the State a fine imposed as a penalty can be enforced by imprisonment, and the act can therefore be made effective as against practically all those who come under its ban. The report of the committee was made to the Horticultural Society at its recent meeting in January, 1894, and the draft of the act proposed was unanimously adopted, to be submitted by the legislative committee of the State Board of Agriculture, giving instruction to secure its passage, if possible, at the present session of the legislature. Following is the act which may be of interest to farmers and fruit growers in sections other than in New Jersey.

AN ACT TO PREVENT DEPREDATIONS BY INSECTS INJURIOUS TO THE AGRICULTURAL AND HORTICULTURAL INTERESTS OF THIS STATE.

PREAMBLE.

WHEREAS, serious injury is annually caused by the depredations of insects to the Agricultural and Horticultural interest of this State, which injury may be lessened or entirely avoided by the use of methods published from time to time in the reports and bulletins of the Agricultural Experiment Stations in New Jersey; and such methods are quite commonly adopted in this State by progressive agriculturists, farmers and fruit-growers and have prove effective and most useful; and the refusal or neglect of certain other agriculturists, farmers and fruit-growers to adopt and practice such methods results in the continued reproduction and spread of such insect pests, to the great damage of their neighbors and the public. Therefore.

1. BE IT ENACTED by the Senate and General Assembly of the State of New Jersey, That it shall be the duty of every agriculturist, gardner, farmer, nurseryman or other cultivator of the soil in the State to adopt and apply from time to time, in the proper seasons therefor, such methods for the destruction of insects injurious to growing crops and fruits of all kinds as are and may be advised and prescribed in the reports and bulletins of the Agricultural Experiment Stations in this State.

2. AND BE IT ENACTED, That whenever requested by a resolution of any County Board of Agriculture of this State, at a meeting of such board, regularly held, the Executive Committee of the State Board of Agriculture of this State shall appoint three persons, residents of the county from which such request shall be made, to act as commissioners or agents for the purpose of this act in such county, without other compensation than an as hereinafter provided.

3. AND BE IT ENACTED, That whenever complaint shall be made to such commissioners, or to any one of them, that any person or persons within their county has or have failed, neglected or refused and continue to fail, neglect or refuse to use such methods so prescribed or to be prescribed by the said Agricultural Experiment Stations in this State, or other equally efficient and satisfactory methods, for the destruction of insects injurious to growing crops and fruits, on land in his, her or their possession, that then said commissioners or any two of them shall notify such person or persons so complained of, in writing, by service of such notice signed by them, upon such person or persons personally, or by leaving the same at their place of residence, that they are required under the penalties provided in this act forthwith to apply such methods so prescribed or to be prescribed as aforesaid, for and towards the destruction of such injurious insects. And said notice shall specify the particular species of insect or insects complained of, and the methods to be adopted for their destruction, with a reference to the reports or bulletins of said Agricultural Experiment Stations, or some one or more thereof, where such insects and the methods for their destruction are or may be described—or in lieu thereof, there may be served with such notice a printed copy of such bulletins or reports and prescribed methods of destroying insects as are relied upon, or a printed extract or extracts therefrom setting forth the methods to be used for their destruction.

4 AND BE IT ENACTED, That it shall be the duty of such person or persons so notified within twenty-four hours after receiving such notice and directions, to proceed to destroy such insects on his lands and premises so complained of, in the manner and by such methods as said notice and directions shall specify; and every person or persons who shall neglect or refuse so to do, for the space of six days after receiving such notice and directions served as aforsaid, shall forfeit and pay a fine not less than twenty-five nor more than one hundred dollars in the discretion of the Court, besides the costs of the suit, to be sued for, received and collected by any one of the commissioners in his own name, adding thereto the name of commissioner, without other words of designation, in any Court of competent jurisdiction in the county in which such offence shall have been committed.

5. AND BE IT ENACTED, That all fines and costs that may be received and collected under the provisions of this act, shall belong to and be paid into the treasury of the State Board of Agriculture of this State, to defray the costs and expenses incident to the enforcement of this act and for the general purposes of the said board. Said expenses to include such reasonable allowance to said commissioners for their services in the premises as may be made by the said Executive Committee of the said State Board of Agriculture.

6. AND BE IT ENACTED, That this act shall take effect immediately.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

[The Conductors of ENTOMOLOGICAL NEWS solicit, and will thankfully receive items of news, likely to interest its readers, from any source. The author's name will be given in each case for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for certain issue. Twenty-five "extras" without change in form will be given free when they are wanted, and this should be so stated on the MS. along with the number desired. The receipt of all papers will be acknowledged.—ED.

DECEASED.—Prof. P. M. FERRARI in Genova.

Dr. GEORGE H. HORN was elected an Honorary Member of the Entomological Society of Belgium on Dec. 26, 1893.

PICTURES for the album of the American Entomological Society have been received from A. D. Hopkins, Rev. G. D. Hulst, H. G. Dyar, Levi W. Mengel, F. H. Hillman, E. P. Van Duzee.

I HAVE taken, at Chicago, in July two Myrmeleonidæ new to the State of Illinois;—*Uluta quadripunctata* Burm. and *Colobopterus excisus* Hag. The former was taken at a lamp and the latter at an electric light. Both are rare, and of *Colobopterus* not many specimens are known.—J. E. McDADE, Kensington, Ill.

TRANSACTIONS of American Entomological Society for October, November and December, 1893, have just been issued, closing volume xx, with 374 pages and 7 plates. The following were contributors: W. H. Ashmead, Nathan Banks, E. Brendel, P. P. Calvert, T. D. A. Cockerell, W. J. Fox, G. H. Horn, C. Robertson, J. B. Smith, C. H. T. Townsend and C. M. Weed.

THE life-history of but one or two species of the family Nemistrinidæ has hitherto been published. Recently, in looking through Prof. Bruner's collection of Diptera, in the University of Nebraska, I discovered a female specimen of the rare *Rhynchocephalus sackeni* Will., which was of yet more interest from the following note given me by Prof. Bruner: "Taken while apparently depositing eggs in the stem of *Eriogonum alatum*. Its actions were very similar to those of a bot-fly; it was so absorbed in its work that it might have been captured with the fingers." The fly is evidently a rapid flyer, like its allies, the Bombyliidæ. It has an elongated ovipostor, but doubtfully of sufficient strength to pierce woody tissue. The eggs of *Hirmoneura obscura* are deposited in the holes of wood-boring insects,

and it is possible that the present species may have similar habits. I shall be glad if further investigation of this plant will throw more light upon the habits of the fly. The specimen was from near Colorado Springs.—S. W. WILLISTON, Lawrence, Kansas.

ON THE BUGONIA SUPERSTITION OF THE ANCIENTS.—Baron C. R. Osten Sacken writes in "Nature" for Dec. 28, 1893: Last August I published in the "Bulletin Soc. Entomol. Italiana" 1893, pp. 186–217, an article entitled, "On the Bugonia of the Ancients, and its relation to *Eristalis tenax*, a two-winged insect." I desire to collect some more materials on that subject, in view of a second edition, and I would be very grateful to readers of "Nature" who may be able to give me assistance in that matter.

The information I require may be expressed in two questions:

(1) Whether travelers in out-of-the-way places in Europe or Asia have not come across vestiges of the superstition about oxen-born bees, still lingering among primitive people?

(2) Whether readers of Oriental literature have not come across passages evidently referring to this superstition, like the passage I reproduce here as an example. I found it in the "Golden Meadows" of the Arab traveler Massoudi (died in Cairo, 955), translated by Barbier de Meynard and Pavet de Courteille, Paris, 1861, vol. iii, p. 233. It relates a conversation which took place in Arabia, and of which this is a fragment: "'Had the bees, which produced this honey, deposited it in the body of a large animal?' asked Yiad. The surveyor answered: 'Hearing that there was a hive near the sea-coast I sent people to gather the honey. They told me that they had found at that place a heap of bones, more or less rotten, in the cavity of which bees had deposited the honey that they brought with them.'"

Baron Osten Sacken, whose address is Heidelberg, Germany, would be happy to send a copy of his original paper to any one interested in the subject.

TRAILED BY A TIGER. (Perils of a scientist now visiting in Pittsburgh).—Mr. William Doherty has been recently spending a few days with Dr. Holland at his residence on Fifth Avenue. He is one of the most daring and successful travelers and explorers, who has risen from the ranks of the American people, though he is known to comparatively a limited circle of friends, who have been his reliance in his adventurous undertakings. He is a Cincinnatian by birth, and is descended from the Scotch-Irish settlers of Mecklenburg County, North Carolina, whose bold stand in favor of independence in pre-revolutionary days is historic. He was graduated at the University of Cincinnati, and went in 1878 to Paris in charge of a portion of the exhibit sent to the Paris exposition by the United States Department of Agriculture. After remaining in Paris six months in the discharge of his duties there, he resolved to spend some time in travel, and visited the countries of Europe lying along the Mediterranean. He spent a year in Greece, then a year in Egypt. After tra-

versing Palestine twice, he purchased a fine Arab horse at Bethlehem in Judea, and mounting the animal headed for the East.

His horseback ride took him across Syria and Persia. He spent a year at Teheran, the capital of Persia; rode into Turkestan, returned to the region of Muscat, and thence made his way into India. Making Calcutta his headquarters, he commenced an extended series of collecting tours, devoting his attention mainly to the insect fauna of the regions he visited. He thoroughly explored the foot hills and higher slopes of the Himalayas, collecting in Kumaon, Sikkim, Bhotan and in Burmah and the Malay peninsula. His explorations in these regions were diversified by expeditions to Java, Celebes and Borneo.

Returning to Calcutta, he finally set out for a more thorough exploration of the islands of the great archipelago. He visited Bali, Sumbawa, Sumba, Ademara, Solor, Timor, Letti, Timor-Laut, Buru, Ambonia, Batchian, Ternate and adjacent islands; thence made his way to Humboldt Bay, on the north shore of New Guinea, exploring along the whole north shore in New Guinea, in the German and Dutch possessions, visiting Jobie and Schouten Islands, being the first naturalist to systematically explore these localities.

Humboldt Bay was visited by the Challenger expedition, but the attitude of the natives was so threatening that no landing was made. Mr. Doherty induced the captain of a vessel to put him into the inner bay, which is a beautiful land-locked sheet of water flanked by mountains, one of them rising to the elevation of 9000 feet above the tide. The bay is studded with little islands, upon one of which Mr. Doherty disembarked, accompanied by his four trusted Lepchas, or native butterfly hunters, whom he had brought with him from the mountains of India, and who had been the companions of his journeyings for many years. The natives of Humboldt Bay are exceedingly hostile and the lives of the party were in hourly danger. Mr. Doherty succeeded by a clever manœuvre in inspiring them with a wholesome awe of his person.

It happened that among the swarms of natives that came crowding about the adventurers armed with bows and spears there was a man who had been carried to sea in his boat and had been picked up by the crew of a Malay prau 500 miles away from land. During his stay among the Malays this man had acquired a little knowledge of their tongue, and through him Mr. Doherty was enabled to communicate with the savages about him.

He took occasion to warn them that any act of hostility would lead to terrible consequences, as he was a mighty wizard, and verified the assertion by exploding a dymanite cartridge which he had adroitly slipped into a crevice of a great boulder seven feet in height, which lay by the shore and which was torn to pieces by the explosion. The effect of this display of terrific and apparently supernatural power was wholesome. Mr. Doherty made it a point, after he had assured himself that he had created a monstrous impression, not to take with him firearms, lest the natives

should think he was in fear of them, but boldly sallied forth with his butterfly nets and explored the shores of the bay and penetrated some distance into the interior, discovering a large fresh-water lake, the existence of which was not known before to geographers, and making wonderful collections of new species, which have since been transmitted to Hon. Walter DeRothschild and Mons. Oberthur, of France.

The natives followed him everywhere and went fully armed, but keeping a respectful distance, not knowing at what minute his terrible rock-rending power might be invoked for their destruction. Finally, however, they became bolder and more threatening in their demeanor, and realizing that his life was in danger he made his way in his boats westward, exploring from point to point as he touched. His life was in his hands, so to speak, during this whole perilous journey, but with amazing tact and coolness he succeeded in carrying out his purposes and in coming off unscathed, save by fever and the effects of the constant nervous strain to which he was subjected.

The following incident is a good illustration of his nerve: One of the best ways of collecting moths is by placing baits for them in proper places, and then visiting the spots after dark with a lantern and capturing them where they have congreated. While in Java Mr. Doherty was following this method, but discovered, to his surprise, during his rounds in the forest, he had been followed for several nights by a Bengal tiger, which had tracked him from tree to tree as he went his walks. The tiger evidently had been deterred from making an onslaught by the lantern which Mr. Doherty carried. Mr. Doherty made up his mind that if the lantern protected him, he would not be deterred by the tiger, and went on with his work night after night, and just as regularly as he went his rounds the tiger followed him. Finally the brute became bolder and showed himself, and Mr. Doherty determined that it was time to put an end to this form of coquetry and laid a bait—a dead animal—in his path, and concealed himself with a rifle in a hollow tree. All night long he sat there waiting for "Old Stripes" to show himself, but singularly enough the tiger had reached the same conclusion as Mr. Doherty, and that night he failed to appear, and thereafter was conspicuous by his absence. He had apparently gotten tired of the business, as Mr. Doherty had. Not all of Mr. Doherty's tiger stories have such an ending, and he has been "in at the death" of not a few of these lords of the jungle. Strange to relate, Mr. Doherty declares that he is less afraid of tigers than of tame elephants. Tame elephants in India, he says, kill on an average one man a year, and as some of them live to be over one hundred years of age they are veritable man destroyers. This is true principally of bull elephants. Cow elephants are more tractable and gentle.

Mr. Doherty possesses a wonderful faculty of acquiring languages, and this power has served him in his journeys. He possesses a colloquial knowledge of twenty-seven of the languages and dialects of Asia and the East, and is wonderfully accomplished in the languages of modern Eu-

rope. His visit to this country is simply for the purpose of rest and recuperation. He proposes in the later Winter or early Spring to return again to explore the islands lying north and east of New Guinea, to again visit New Guinea, and then to explore Hainan, Formosa and the interior of China. After that, if spared, he may attack East Africa and Madagascar, or possibly will devote himself to a thorough exploration of the eastern foot hills and slopes of the Andes in South America. These are the projects which he is discussing with his friends. He has spent the Summer with his relatives at a watering place in Maine, and four weeks with his brother-in-law, Prof. J. S. Hart, of Cornell University. He came from Ithaca to spend a few days with Dr. Holland, who possesses, in his great collection, large portions of the insects collected by Mr. Doherty in the East. Mr. Doherty's collections are found mainly in those great assemblages of insect marvels, which have been made by Baron Rothschild and Messrs. Elwes and Druce in England, by Oberthur, in France, and by Dr. Holland, of Pittsburgh.—*Pittsburgh Gazette.*

Identification of Insects (Imagos) for Subscribers.

Specimens will be named under the following conditions: 1st, The number of species to be **limited to twenty-five** for each sending; 2d, The sender to pay all expenses of transportation and the insects to become the property of the American Entomological Society; 3d, Each specimen must have a number attached so that the identification may be announced accordingly. Exotic species named only by special arrangement with the Editor, who should be consulted before specimens are sent. Send a 2 cent stamp with all insects for return of names. Before sending insects for identification, read page 41, Vol. III. Address all packages to ENTOMOLOGICAL NEWS, Academy Natural Sciences, Logan Square, Philadelphia, Pa.

Entomological Literature.

THE ANNALS AND MAGAZINE OF NATURAL HISTORY. London, December, 1893.—A contribution to the morphology of the limbs and mouthparts of crustaceans and insects, Dr. H. J. Hansen [trans. from Zoologischer Anzeiger]. On the cerebral nuclei of Myriapods, J. Chatin [transl. from Comptes Rendus].

TRANSACTIONS OF THE KANSAS ACADEMY OF SCIENCE (1891–92), xiii. Topeka, 1893.—Notes on the elementary comparative external anatomy of insects, V. L. Kellogg. Insects Notes, id, figs. On the the horse flies of New Mexico and Arizona, C. H. T. Townsend. On a peculiar Acalyptrate Muscid found near Turkey Tanks, Ariz., id.

NOVA ACTA DER KAIS. LEOPOLDINO-CAROLINÆ DEUTSCHEN AKADEMIE DER NATURFORSCHER, lviii, 4. Halle, 1892.—Systema Geometrarum zonæ temperatioris septentrionalis: Systematic revision of the spanworms of the north temperate zone, C. F. von Gumppenberg. Part V.

COMPTES RENDUS. L'ACADEMIE DES SCIENCES. Paris, Nov. 27, 1893. —On the male genital apparatus of Hymenoptera, M. Bordas. Researches on the anatomy and development of the female genital armor of Orthoptera, M. Peytoureau.

THE AMERICAN NATURALIST. Philadelphia, December, 1893.—Lycænid larva on *Atriplex*, C. H. T. Townsend.

NATURWISSENSCHAFTLICHE RUNDSCHAU, BRAUNSCHWEIG, Dec. 9, 1893.—Summary of W. M. Wheeler's "A contribution to insect embryology," R. von Hanstein.

KNOWLEDGE. London, Dec. 1, 1893.—Curious cocoons, ii, E. A. Butler, figs.—Jan. 1, 1894. Bark-boring beetles, E. A. Butler, figs.

THE GEOLOGICAL MAGAZINE. London, December, 1893.—Notes on the eocene tertiary insects of the Isle of Wight, Rev. P. B. Brodie.

MITTHEILUNGEN AUS DEM NATURHISTORISCHEN MUSEUM IN HAMBURG, x, 2, 1893.—[On the insects collected by Dr. F. Stuhlmann in East Africa:] Hymenoptera, F. F. Kohl; Formicidæ, Dr. G. Mayr; Diptera, V. von Roeder; Lepidoptera, Dr. A. Pagenstecher.

NATURE. London, Dec. 7, 1893.—On the classification of the Tracheate Arthropoda, a correction, R. I. Pocock.

BULLETIN OF THE MUSEUM OF COMPARATIVE ZOOLOGY AT HARVARD COLLEGE, XXV, 2. Cambridge, Mass., December, 1893.—Compte-Rendu sur les Pantopodes, W. M. Schimkewitsch, 2 pls.

PAPERS ON IOWA INSECTS, consisting of Fruit and Forest tree insects (reprinted from Trans. State Hort. Soc. 1892, pp. 96–127) and Some Iowa Farm insects (reprinted from Rep. State Agric. Soc. 1892, pp. 665–699). By Herbert Osborn, Professor of Zoology and Entomology, Iowa Agric. College. Des Moines, 1893. The many figures in the text add greatly to the value of this pamphlet which is intended for fruit-growers, farmers and stock-raisers.

INSECT LIFE, vi, 2. Washington, December, 1893.—Fifth annual meeting of the Association of Economic Entomologists [at Madison, Wis., Aug. 14, 15, 16, 1893]. Presidential address, S. A. Forbes. Methods of treating insects affecting grasses and plants, H. Osborn. Notes on methods of studying life-histories of injurious insects, L. O. Howard. Another mosquito experiment, id. *Phytomyza affinis* Fall. as a cause of decay in Clematis, J. Ritsema Bos. Farm practice and fertilizers as insecticides, J. B. Smith. The preservation of larvæ for study, H. Garman. The distribution of Coccidæ, T. D. A. Cockerell. Note and record-keeping for the economic entomologist, A. D. Hopkins. Illustrations for the economic entomologist, H. Garman. The arsenites and arsenical mixtures as insecticides, C. P. Gillette. Destructive Scolytids and their imported enemy, A. D. Hopkins. Parasitic and predaceous insects in applied entomology, C. V. Riley. The economic value of parasites and predaceous

insects, J. B. Smith. Insect foes of American cereal grains, with measures for their prevention or destruction, F. M. Webster, figs. Fumigation with bisulphide of carbon for the complete and rapid destruction of insects which attack herbaria, furs and woolens, H. du Buysson. Methods of attacking parasites of domestic animals, H. Osborn. Remedies for insects injurious to cotton, H. E. Weed. The cheese or meat skipper, M. E. Murtfeldt. Hydrocyanic acid as an insecticide, D. W. Coquillett. On arsenical spraying of fruit trees while in blossom, J. A. Lintner. Some insects of the year, F. M. Webster. Insects of the year in New Jersey, J. B. Smith. Some of the more important insects of the season, H. Osborn. *Icerya purchasi* and *Vedalia cardinalis* in New Zealand, R. A. Wright. Notes on some insect pests of Trinidad, F. W. Urich. Notes on slip-records, T. D. A. Cockerell. Dipterous parasites in their relation to economic entomology, C. H. T. Townsend.

THE CANADIAN ENTOMOLOGIST. London, Ont., December, 1893.—Notes on the occurrence of *Hepialus thule* Strecker at Montreal, H. H. Lyman. On some undetermined Bombyces, H. G. Dyar. The Mesilla Valley cottonwood leaf-miner determined, C. H. T. Townsend. Descriptions of some species of Coleoptera occurring near Allegheny, heretofore undescribed, J. Hamilton, M.D. Notes and queries, W. J. Holland. *Exochilium mundum* Say attacking the fall web-worm, A. H. Kirkland. North American Thysanura–iv, A. D. Macgillivray. On the Eudriinæ, A. R. Grote. List of Coleoptera taken at Sparrow Lake, Ont., J. Hamilton, M.D. Notes on *Hepialus*, H. G. Dyar.

THE ZOOLOGICAL RECORD, volume the twenty-ninth. Being records of zoological literature relating chiefly to the year 1892. Edited by D. Sharp, M.A., F.R.S., F.Z.S., etc. London: Gurney & Jackson, 1893. Arachnida (39 pp.), Myriapoda and Prototracheata (7 pp.), R. I. Pocock. Insecta (332 pp.), D. Sharp.

ZOOLOGISCHER JAHRESBERICHT FUR 1892.—Herausgegeben von der Zoologischen Station zu Neapel. Redigirt von Prof. Paul Mayer. Berlin, R. Friedländer & Sohn, 1893. Arthropoda (Tracheata 40 pp.), Dr. W. Giesbrecht and Prof. P. Mayer.

LEPIDOPTERA INDICA by F. Moore. London, L. Reeve & Co. Part xvi, 1893, contains pp. 89–112, vol. ii, pls. 115–122. Satyrinæ.

DIE SPINNEN AMERIKAS—Epeiridæ—von Graf E. Keyserling nach dessen Tode herausgegeben von Dr. George Marx, iv Bd, 2 half. Nürnberg, 1893. Verlag von Bauer & Raspe (Emil Küster). Pp. 209–377. Tab. x–xix.

BIBLIOTHECA ZOOLOGICA, Heft viii. Stuttgart, 1893.—Researches on mimicry as a basis for a natural system of the Papilionidæ, 2nd part: Researches on mimicry, Dr. E. Haase, 8 pls.

REVUE BIOLOGIQUE DU NORD DE LA FRANCE, vi, 2. Lille, November, 1892.—Apropos of some recent publications on the false parasitism of the Chernetidæ on different Arthropods, R. Moniez.

COMPTE RENDU. SOCIETE DE BIOLOGIE. Paris, Dec. 9, 1893.—On the reproduction of the Sarcoptidæ, Dr. E. Trouessart.

COMPTE RENDU. SOCIETE PHILOMATHIQUE DE PARIS, Dec. 9, 1893.—Male genital apparatus of the Hymenoptera of the tribe of the Bombinæ, M. Bordas.

BIOLOGIA CENTRALI-AMERICANA. Part cxi. London, September, 1893.—Arachnida-Araneidea, pp. 105–120, O. P. Cambridge. Lepidoptera-Rhopalocera, vol. ii, pl. lxxvi, F. D. Godman & O. Salvin. Lepidoptera-Heterocera, H. Druce, pls. lvi, lvii. Orthoptera, pp. 9–40, pls. ii, iii, A. de Bormans, H. de Saussure and L. Zehnter. Hymenoptera, vol. ii, pp. 193–216, pl. xi, P. Cameron—Part cxii, October, 1893. Hymenoptera, vol. ii, pp. 217–256, P. Cameron. Lepidoptera-Heterocera, pl. lviii, H. Druce. Lepidoptera-Rhopalocera, vol. ii, pp. 297–312, F. D. Godman and O. Salvin. Orthoptera, pp. 41–64, pl. iv, H. de Saussure and L. Zehnter.—Part cxiii, November, 1893. Coleoptera, vol. vi, pt. 2, pp. 125–164, G. C. Champion. Lepidoptera-Rhopalocera, vol. ii, pp. 313–328, F. D. Godman and O. Salvin. Orthoptera, pp. 65–104, pl. v, H. de Saussure and L. Zehnter.

PSYCHE. Cambridge, Mass., January, 1894.—Biological notes on American Gryllidæ, S. H. Scudder. Bibliographical notes–v, S. Henshaw. New and undescribed genera of West African Noctuidæ, W. J. Holland. The Nemastomatidæ and Trogulidæ of the United States i, N. Banks. Wing-length in some New England Acrididæ i, A. P. Morse.

THE ENTOMOLOGIST'S RECORD. London, Dec. 15, 1893.—Pupal development and color of imago, J. W. Tutt. The history of butterfly classification, F. J. Buckell.

ARCHIVES DE ZOOLOGIE EXPERIMENTALE ET GENERALE (3) I, 2. Paris, 1893.—On the nidifications of *Sphex splendidulus* and *Chalicodoma perezi*, H. de Lacaze-Duthiers.

BIOLOGISCHES CENTRALBLATT. Erlangen, Dec. 15, 1893.—Composition and origin of termite societies, C. Emery.

MICHIGAN AGRICULTURAL EXPERIMENT STATION. Bulletin 102.—Insects injurious to celery, G. C. Davis, figs. Agricultural College, Michigan, 1893, 32 pp.

ACTES DE LA SOCIETE SCIENTIFIQUE DU CHILI, III, 1 and 2. Santiago, October, 1893.—Therapeutic employment of *Latrodectus mactans* in Mexico, A. L. Herrera. On the wandering cricket of Chili, C. Berg and F. Letaste. The Coccidæ of Chili, T. D. A. Cockerell. New notes on the Coleoptera of Chili, P. Germain.

REVUE SCIENTIFIQUE DU BOURBONNAIS, vii, 73. Moulins, January, 1894.—Geographical catalogue of the Anthicidæ of France, Corsica, Algeria and Tunis, M. Pic.

THE ENTOMOLOGIST'S MONTHLY MAGAZINE. London, January, 1894. —Notes on the earlier stages of the Nepticulæ (cont.), J. H. Wood. An attempt to account for moth-grease with notes on its cure by ether, H. G. Knaggs, M.D. A synopsis of British Psychodidæ (cont.), Rev. A. E. Eaton.

THE BRITISH NATURALIST. London, December, 1893.—Entomological nomenclature. F. J. Buckell. The Pterophorina of Britain (cont.), J. W. Tutt. The regrettable announcement is made that this is the last number of this pleasant journal.

ENTOMOLOGISCHE NACHRICHTEN. Berlin, December, 1893.—Comparative researches on the abdominal segments of female Hemiptera-Heteroptera and -Homoptera, C. Verhoeff, Ph.D.

DIE EXOTISCHEN KAFER IN WORT UND BILD. Bearbeitet von Alexander Heyne. Verlag von Ernest Heyne in Leipzig, Hospitalstrasse 2, 1893.—1 Lieferung. Pp. vii, 6, two colored plates of 58 figures of Cicindelidæ and seven of Dynastidæ respectively. To be published in twenty Lieferungen at 4 marks a piece, appearing every six weeks, each containing two colored plates and descriptive text.

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LA GRAPHITOSE ET LA SEPTICEMIE chez les Insectes. Deux maladies des larves des Lamellicornes causées par les Bactéries, par I. Krasilshtshik. Extract: Mem. Soc. Zool. France, vi, p. 235, et seq., 1893; figs., 41 pp.

MISSISSIPPI AGRICULTURAL AND MECHANICAL COLLEGE EXPERIMENT STATION. Bulletin No. 27.—Insecticides and their application, H. E. Weed. Agric. Coll. Miss., November, 1893, 24 pp., figs.

MEMOIRES SUR LES LEPIDOPTERES rediges par N. M. Romanoff. Tome vii. Monographie des Phycitinæ et des Galleriinæ par E. L. Ragonot. Saint Petersbourg, 1893, 658 pp., 23 plates, of which 20 are colored. This important volume is the seventh of the series edited by the Grand Duke Nicholas, of Russia. It deals with the Phycitinæ and Galleriinæ of the entire world. The author, M. Ragonot, is a well-known authority on these groups, and is to be congratulated on the completion of his work. The plates contain in all 569 figures.

NEW SPECIES OF NORTH AMERICAN INSECTS DESCRIBED IN THE PRECEDING LITERATURE.

COLEOPTERA.

Bembidium postfasciatum Hamilton, Can. Ent. xxv, p. 305, Pa. *Platynus parmarginatus*, p. 305, Pa. *Stenolophus humidus*, *Soronia substriata*, p. 306, Pa. *Corymbites elongaticollis*, p. 307, Pa., Ont. *Hemiptychus castaneus*, p. 307, Pa. *Isomira ruficollis*, *Acalles curtus*, p. 308, Pa. *Pachybaris strigapunctus*, p. 309, Pa. *Balaninus confusor*, p. 309, Mass., Pa., O., W. Va., N. C.

Cassididæ: n. gen. et spp. Mex., Cent. Am., Champion, Biol. Cent.-Am. Coleop. vi, pp. 125–:64.

DIPTERA.

Bibio tristis Williston and Kellogg, Trans. Kans. Acad. Sci. xiii, p. 113, fig., Kansas.

Diachlorus guttatulus Townsend, Trans. Kans. Acad. Sci. xiii, p. 134, N. Mex. *Micropeza turcana*, p. 136, Ariz.

HYMENOPTERA.

Blennocampa populifoliella Riley MS., Townsend, Can. Ent. xxv, p. 304, N. Mex.

Pompilidæ: n. spp. Mex., Cent. Am., Cameron, Biol. Cent.-Am. Hymen. ii, pp. 193–222. Scoliidæ, id. l. c. pp. 222–256.

LEPIDOPTERA.

Thelethia n. gen. name for *Thia* (preocc.) Dyar, Can. Ent. xxv, p. 301. *Hepialus argenteomaculatus* Harr., var. *perdita*, p. 327.

Hesperidæ: n. spp. Mex., Cent. Am., Godman and Salvin, Biol. Cent.-Am. Lepid.-Rhopal. ii, pp. 297–328.

ORTHOPTERA.

Forficulidæ: n. spp. Mex., Cent. Am., de Bormans, Biol. Cent.-Am. Orthop. pp. 9–12.

Blattidæ: n. spp. Mex., Cent. Am., U. S., de Saussure and Zehnter, l. c. pp. 13–104.

THYSANURA.

Fam. Aphoruridæ (nom. nov.) Macgillivray, Can. Ent. xxv, p. 313. New gen. and spp. Aphoruridæ and Poduridæ, pp. 313–318.

ARANEINA.

Epeiridæ: n. spp., Marx, Die Spinnen Amerikas, iv, pp. 209–377. N. spp. Mex., Cambridge, Biol. Cent.-Am., Arach.-Aran. pp. 105–120.

PHALANGIDA.

Trogulidæ: *Ortholasma* n. gen. Banks, Psyche vii, p. 11. *O. rugosa*, p. 12, S. Cal. *Dendrolasma*, p. 12. *D. mirabilis*, p. 12, Wash.

The Entomological Section

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

PROCEEDINGS OF MEETINGS.

The following papers were read and accepted by the Committee for publication in ENTOMOLOGICAL NEWS:

NEW WEST AFRICAN DYSGONIIDAE.

By W. J. HOLLAND, Ph. D., Pittsburg, Pa.

(The following descriptions are all of species found in the valley of the Ogove River. The types are in my collection).

DYSGONIIDÆ Moore.

(*Ophiusidæ* Guen).

SPHINGOMORPHA Guen.

1. **S. pudens,** sp. nov. ♂.—Palpi, front, and a stripe on the middle of the collar pale fawn; patagia, upperside of the thorax and the abdomen pale chestnut; the lowerside of the thorax and the abdomen are cinereous. The primaries are pale reddish fawn: beyond the base the wing is crossed by a broad band of chestnut, narrowing irregularly from the inner margin to the middle of the cell, and then widening to the costa; this band is margined externally and internally by fine paler lines, of which the outer line is most conspicuous, becoming broadly silvery white on the inner margin; there is a short waved, dark browned transverse line on the costa beyond the cell, and a narrow, straight, submarginal brown line running from the apex to the inner margin. The apex and outer angle are clouded with brown, and there are a few small white subapical spots on the costa. The secondaries are fuscous, darker toward the outer margin, with the costa stramineous, shining; the outer margin is bordered with pale ochraceous, and there is an incomplete transverse ochraceous band above the anal angle. Both wings on the underside are pale rosy fawn, with the inner margin still paler; both have a minute black spot at the end of the cell, and beyond the cell the wings are sparingly irrorated with minute blackish scales, and in some specimens accentuated by a few light spots arranged in a transverse series just beyond the cell. The primaries at the apex, and the secondaries at the anal angle have a few obscure blackish striæ.

♀.—The female does not differ from the male, except in the shorter and more robust form of the abdomen. Expanse; ♂, 55 mm.; ♀, 60 mm.

LAGOPTERA Guen.

2. **L. rubricata** sp. nov. ♂.—Palpi, front, corselet, and upperside of the thorax chestnut; upperside of the abdomen paler brown; lower side of the thorax and abdomen and anal tuft of hair minium-red. The pri-

maries are chestnut, with the characteristic lines and markings dark brown. The secondaries are minium-red with the inner margin broadly blackish, this blackish tract being evaded beyond the cell by the red of the outer half of the wing which also sweeps inwardly along the inner margin. The fringe at the anal angle is gray, as are also the tufted hairs along the inner margin. On the under side both wings are minium-red. The primaries have an obscure lunulate discal spot. Expanse 55-60 mm.

There is an unnamed specimen of this insect in the British Museum.

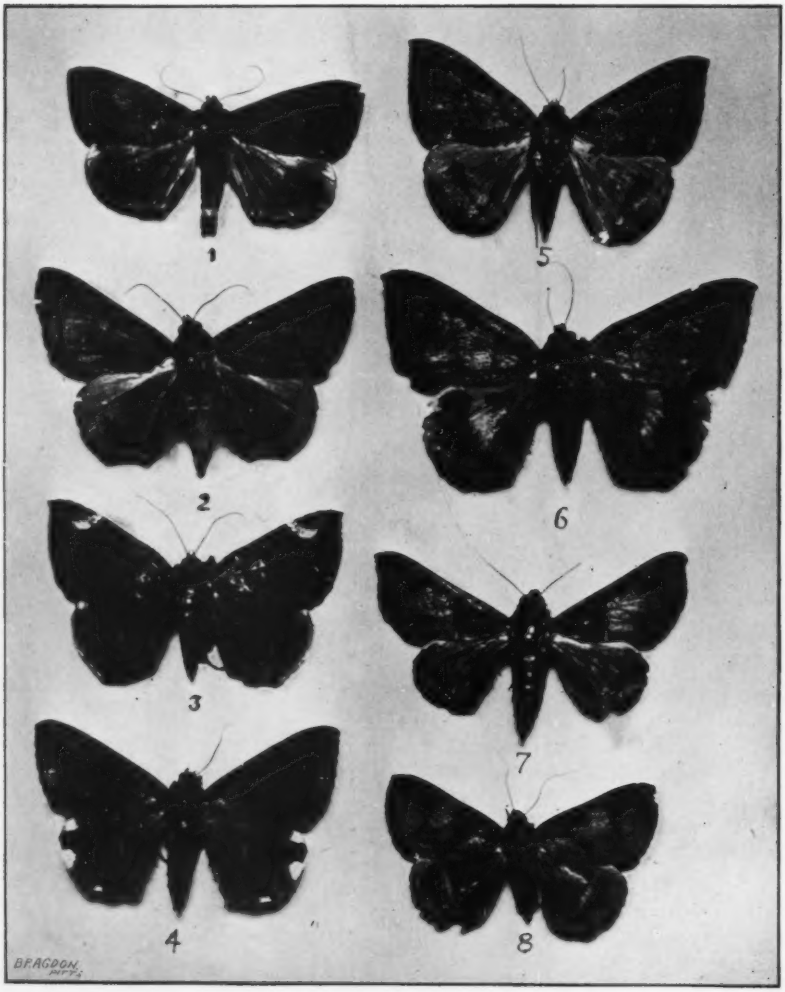
MINUCIA Moore.

3. **M. verecunda** sp. nov. ♂.—Palpi, head, and upperside of the thorax chestnut. The upperside of the abdomen is fuscous; the lowerside of the thorax and abdomen is paler, sericeous. The upperside of the primaries is cinereous chestnut, with a broad submarginal band of dark chestnut, constricted opposite the end of the cell; there is a lunulate dark spot at the end of the cell and a minute blackish spot in its middle. The secondaries are fuscous, paler at the base and the outer angle, and with the outer third shaded near the middle of the margin with black. On the underside the primaries are fuscous, crossed by a pale grayish band beyond the end of the cell, and with the outer third, except on the margin, broadly blackish. The secondaries below are fuscous laved with ochraceous at the base and darker on the outer margin. Expanse 55 mm.

OPHIODES Guen.

4. **O. catocalina** sp. nov. ♂.—Front, collar, patagia, and the upperside of the thorax rufous ochraceous; the upperside of the abdomen is fuscous; the lowerside of the body is obscure pale ochraceous. The primaries are rufous ochraceous, with the fringes brown; they are marked by five narrow, transverse, brown lines, viz.: a basal, a subbasal, two transverse limbal, and a submarginal line. The submarginal line is broader than the rest and less sharply defined; the outermost of the transverse limbal lines is composed of a series of regularly curved lines located upon the interspaces. This series is sharply deflected toward the base at the first subcostal nervule. The innermost of the transverse limbal lines and the subbasal line approach each other as they draw near the inner margin. The secondaries are fuscous on the basal third, and bright yellow on the outer two-thirds, except where crossed by a broad black submarginal band, which diminishes in size from the outer angle toward the inner margin. On the underside both wings are paler; both have a lunulate discal spot at the end of the cell; both are traversed beyond the cell by incomplete transverse bands parallel to the outer margin. Of these bands the submarginal band is the heaviest. The primaries are marked above the outer angle by a large, round, blackish spot.

♀.—The female does not greatly differ from the male, except in the greater robustness of the abdomen. Expanse: ♂, 65 mm.; ♀. 70 mm.



See page 57

WEST AFRICAN DYSGONIIDÆ Holland (Reduced one-fifth).

NAXIA Guen.

5. **N. apiciplaga** sp. nov. ♂.—Palpi, front, patagia and upperside of the thorax, dark brown; the upper and lowersides of the abdomen and the lowerside of the thorax are dark fuscous. The legs are concolorous, the tarsi are ringed with whitish. The primaries are dark brown, marked with darker geminate crenulated basal, subbasal, median, limbal, and submarginal transverse lines. At the base the intervals between the lines are paler, and toward the costa bright ferruginous. On the costa toward the apex is a large subtriangular patch of gray margined inwardly with silvery white and accentuated on the costa by three minute white spots. The fringes are whitish, except at the outer angle, where they are blackish. The secondaries are dark blackish fuscous, with the base clothed with grayish hairs. The fringes are broadly whitish from the outer angle to the end of the first median nervule. On the underside both wings are cloudy fuliginous, crossed with a number of parallel, crenulated, darker lines; both have the outer margins laved with light gray; both are heavily clouded with black about the middle near the outer margin. The primaries have the inner margin pale gray. Expanse 55 mm.

EXPLANATION OF PLATE II.

Fig. 1. *Minucia verecunda* sp. nov.
" 2. *Lagoptera rubricata* sp. nov.
" 3. *Naxia apicipla* sp. nov.
" 4. *Achæa lienardi* Boisd.
" 5. *Ophiodes croceipennis* Walk.
" 6. " *catocalina* sp. nov.
" 7. *Sphingomorpha pudens* sp. nov.
" 8. *Lagoptera parallelepipeda* Guen. ♀.

A NEW SCALE-INSECT ON AGAVE.

By T. D. A. COCKERELL.

Aspidiotus bowreyi, n. sp.—Female scales crowded on the plant, reminding one of *Pseudoparlatoria ostreata*. Scale elongate, slightly over 2 mm. long, gray, with the circular blackish exuviæ towards one end; first skin covered. When the film of secretion is removed, the exuviæ are shining black. Female (after boiling in caustic soda) broad pyriform, pale yellow. Three pairs of terminal lobes, none very prominent; middle pair close together but not touching, low, with truncate ends; second and third pairs broader, the third pair inconspicuous. Beyond the lobes the margin presents five distinct serrations, and beyond these some indistinct serration. The club-shaped thickenings (such as Comstock describes in *A. smilacis*) are very distinct; there is a small one at the inner

margin of each median lobe, and four larger ones on each side beyond, namely at the outer margin of the middle lobe, at each side of the second lobe, and besides the third lobe. Two rows of orifices run parallel with the margin, somewhat as in Maskell's figure of *A. corokiæ*. Four groups of ventral glands, the cephalolaterals of about seven, the caudolaterals of about eight. Anal orifice a considerable distance from the hind end.

Hab.—On *Agave rigida*, at Hope, Jamaica. Collected by Mr. J. J. Bowrey, sent by Prof. C. H. T. Townsend.

This interesting species is noteworthy for the form of the scale of the female, which is elongate with the exuviæ to one end, after the manner of the male scale of *A. biformis* and other species. Females with young were sent, but the male has not yet been observed. This is not the first Coccid found on *Agave*, for, in 1888, Mr. Douglas described *Coccus* (*Gymnococcus*) *agavium*, found on an *Agave* which came from North America, but still unknown to collectors in this country.

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DESCRIPTIONS OF CERTAIN GEOMETRID LARVÆ.

By HARRISON G. DYAR, New York.

Sabulodes dositheata Guen.

Egg.—Elliptical, flattened above and below, slightly hollowed above, smooth, shining pale pearly green. Under a microscope it is very slightly irregularly creased. Size .9 + .6 + .5 mm. Laid in a cluster of about 40 or less on the underside of a leaf.

Young larva (stage iii?).—Head round, pale, with a brownish tinge, especially around mouth and sides; ocelli black; a few setæ; width 0.7 mm. Body green, tinged with white, pale ventrally. A broad, subdorsal, blackish shade-band which, as well as the ground color, contains several indistinct, whitish, longitudinal lines. A row of medio-ventral dark brown spots.

Mature larva (stage vi?).—Head rounded, sordid white, brown on the mouth parts, ocelli black; width 2.6 mm. Body cylindrical, plump, abdominal feet on joints 10 and 13, the joints between small. A few small, pale setæ from the surface of the body. Color milky-white or pale green, darker dorsally, with germinate dorsal, single subdorsal, lateral and stigmatal pale yellow lines, all rather broad with irregular edges. Spiracles pale ochre. Anal plate white. A white line on anal feet. Thoraic feet white, with black tips.

Pupa.—Smooth, obsoletely wrinkled. On the head, just back of the eyes, a small warty prominence; cremaster flattened, tapering, granular; its hooks well fastened into the silk of the cocoon. Color uniform milky-white, except the antenna cases, which are bright brown, strongly con-

trasting, the color passing over vertex of head. Length 20 mm.; width 6 mm.

Cocoon.—Composed entirely of silk, white, resembling a spider's nest. Spun between leaves or in a folded leaf on the tree.

Food-plants.—*Eucalyptus, Ricinus, Rhamnus, Salix*, etc.

Larvæ from Santa Barbara, Cal. All the species here described, except the two following and the last one, were kindly determined by Dr. Geo. T. Hulst.

Endropia hypochraria H.-S.

First stage.—Head red-brown, with a lateral white spot and one above the mouth; width .4 mm. Body six times banded, with whitish bands between the thoracic and abdominal feet, the bands containing rather large white spots. A brown ventral line. Lenth 4 mm.

Second stage.—Head white; a large carmine-brown patch covers the vertex and extends down each side before the eyes and above the mouth; width 6 mm. Body carmine-brown, marked as before.

Third stage.—Head as before, the brown patch more extensive; width .9 mm. Pale bands on the body much interrupted; later the head becomes brown mottled with white, black in front with two irregular vertical white lines and white clypeus. Body purple-brown finely streaked longitudinally with yellowish; venter yellowish; subdorsal yellow spots on joints 5, 6, 7 and 8 and stigmatal black ones on joints 5–9.

Fourth stage.—Head pale brown with dark brown mottlings and a vertical black band each side of the front, dentate inwardly, the two conjoined at the vertex and above mouth; width about 1.3 mm. Body yellowish wood-brown, mottled with darker brown, with an indistinct dorsal and ventral band and subdorsal, lateral and two subventral rows of minute segmentary elevated black spots, each of the latter bearing a small, inconspicuous black hair; spiracles black. Length 29 mm.

Fifth stage.—Head as before; width 1.8 mm. Body also the same. Ventral pale band bordered sharply with dark brown subdorsal and substigmatal interrupted bands, paler than the ground color.

Sixth stage.—Head pale brown, mottled with darker brown; white in front with black specks and mottlings, separating two broad black bands which unite at the vertex. Width 2.7 mm. Body rust-red, with fine longitudinal wavy black lines in germinate dorsal, three or four irregular lateral and four ventral bands; between the two pairs, or the latter, a broad pale medio-ventral band. Feet and joint, 2 paler. The minute piliferous tubercles are black. The spiracles have a black border.

Pupa.—Formed in a folded leaf and held in place by numerous threads. It is black, shining, red-brown in all the sutures and joinings of the parts. The abdominal segments taper rapidly; the cremaster is large and stout and terminates in two much-recurved spines with several shorter knobbed hairs growing from their bases. Length 15 mm.

Food-plants.—Found on Sassafras (*S. officinale*), but readily ate other leaves.

From Dutchess County, N. Y.

Angeronia crocataria Fabr.

I think it worthy of record that this species hibernates in the larva state when well grown. From eggs laid in August larvæ were produced which reached the fifth stage and hibernated. The larva in the first four stages, and also at maturity, is green; but in the fifth, or hibernating stage, there is a marked change of color. After the fourth molt it is pale, dull brown above, a little darker at the sides, paler below, evenly concolorous and ceases feeding.

Probole amicaria H.-S.

Head whitish green with a vertical, pulverulent, crimson line before the ocelli; mouth brownish, ocelli black; width 1.4 mm. Body the same whitish green: a dorsal crimson band, broadly interrupted on the middle of each segment and furcate on joint 2, the forks meeting the lines on the head. Feet slightly touched with crimson.

Last stage.—As before; the stripes on the head very pulverulent; width 2.2 mm. Later the markings become deep carmine-brown, fainter than before and blended, with obscure, similarly-colored mottlings over the body. A transverse stripe across the dorsum on joint 3, another on joint 8, a little elevated and preceded by two dots, around which partly extends a shade from the band. Spiracles ringed with black.

Food-plant.—Found on dogwood (*cornus*).

Larva from Rhinebeck, N. Y.

Synchlora excurvaria Pack.

Head pale brown, minutely pilose. Body with the segments projecting laterally in points, the dorsum roughened. On these lateral processes the larva attaches various objects, which gives it a strange appearance. Body light brown with black shades and an interrupted dorsal line. Two reddish points anteriorly on joints 3–9 and 13; other elevated reddish spots laterally and fine hairs; the skin granular. On joints 5–9 are curious structures composed of pieces of dead leaves, etc. After moulting the larva applied several pieces of green leaf to itself, which subsequently withered, and also some pieces of paper from its label. Length about 12 mm.; width of head 1 mm.

Cocoon.—Composed of the material which the larva carried on its back, spun together with silk.

Pupa.—Pale wood-brown; a blackish dorsal line; a point above each eye, a line on antenna cases and the eyes blackish. Indistinct brownish shades and spots throughout. Length 8 mm.

Larva from Lake Worth, Fla.

Semiothisa granitata Guen.

Head with rounded lobes, flat in front; white before, reddish at sides, with some brownish spots and a black patch below the apex of each lobe; ocelli black, mouth sordid whitish; width 1.2 mm. Abdominal feet present on joints 10 and 13, normal. On each segment a series of low, smooth, black tubercles, each bearing a rather long, black hair; a dorsal and lateral row of white, intersegmental patches and an interrupted orange, subdorsal band; the rest of the body finely mottled with black and white on a sordid purplish ground color; a black dorsal patch in the centre of each segment. Thoracic feet black.

Pupa.—Wing cases prominent, rounded; abdomen cylindrical, slightly tapering; cremaster conical, with two divergent spines; cases creased, abdomen minutely punctured. Color blackish brown. Length 10 mm.; width 3 mm.

Food-plants.—Ribes

Larva from Yosmite, Cal.

Phasiane irrorata Pack.

Head rounded, green with a yellowish line behind the eyes; antennæ pale. Body cylindrical, abdominal feet on joints 10 and 13. Color green, finely streaked longitudinally with yellowish on dorsum and venter; a stigmatal yellow band on the fold, continuous with the band on the head and passing on to the last pair of abdominal feet. A few short, black setæ, visible with a lens.

Pupa.—Abdomen tapering, punctured; wing cases slightly creased; cremaster long, tapering, ending in two divergent points. Color brown.

Food-plant.—Cottonwood (*Populus*).

Larva from Phœnix, Ariz.

Selidosema juturnaria Guen.

Head scarcely shining, greenish, testaceous, ocelli brown, mouth brownish; width 1.8 mm. Abdominal feet on joints 10 and 13. Color green, the folds of the segmental incisures yellowish. A dorsal band of four narrow, pale yellow lines and a broader stigmatal line, all slightly wavy. Spiracles faintly reddish. The larva rests flat on the leaf like a Noctuid.

Pupa.—Cylindrical, rounded; the abdomen small, tapering; cases finely creased, body punctured; cremaster cylindrical, tapering, with two outcurving thick spines from its end. Length 15 mm.; width 5 mm.

Food-plant.—Rhamnus.

Larva from Yosemite, Cal.

Eucaterva variaria Grote.

Egg (from abdomen of ♀ moth).—Elliptical, flattened on two opposite sides and truncate at one end, densely covered with hexagonal depressions; color very pale green. Length .8 mm., thickness .5 mm. Under the microscope the hexagonal areas are seen to be formed by broad, elevated,

reticulated lines, more or less granular and often broken. These elevations are nearly white. The truncate end of the egg has an outer elevated ridge and an inner one, between which is a ring-like depression. The central elevation is hollowed to form the micropyle, and the reticulations radiate around it.

Larva (from cast skin).—Head round, the clypeus triangular, smooth, with a few short hairs; white, with numerous black dots, here and there partly confluent (like the wings of the moth), less thick on the lower part of the head. Clypeus white, with two confluent black dots near its apex; ocelli six, black; labrum and jaws brown; width about 2.2 mm. Anal plate large, oblong, white, dotted with black, like the head, but the spots more confluent. The body may have been white with black marks. Spiracles black.

Pupa (from empty skin).—Skin thin, so that it is misshapen after the exit of the moth; apparently cylindrical, a littlle tapering on the abdomen with rounded ends cremaster; short, broad, with six spines, recurved at their ends, the two posterior ones arising from slightly elevated conical bases. Color apparently very pale brown, or perhaps nearly white, with a slight bluish bloom over the surface. Length 16 mm ; width 4 mm.

Cocoon.—Spun among the narrow leaves of its food-plant; composed entirely of silk; a dense network, the strands thick, so that the cocoon looks as if full of round holes. Inside of this is another slight netting, obscuring the pupa from view. Shape oblong, rounded; color white, irregularly stained with yellowish. Length 23 mm.; width 10 mm.

The food-plant is *Chilopsis saligna* (Townsend).

From Las Cruces, N. M., sent by Mr. C. H. Tyler Townsend (see "Psyche," vol. vi, page 258).

WHILE traveling in Poland, Prof. Jaeger visited the highly accomplished Countess Ragowska, at her country residence, when she exhibited her fine, scientifically-arranged collection of butterflies and other insects, and told him that she had personally instructed her children in botany, history and geography by means of her entomological collection—botany, from the plants on which the various larvæ feed; history, from the names, as *Menelaus*, *Berenice*, etc., given as specific names to the perfect insects; and geography, from the native countries of the several specimens. From the scientific names of insects, and the technical terms employed in their study, quite a knowledge of Latin and Greek, and philosophy in general, might also he gained.—*Cowan's Curious Facts.*

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